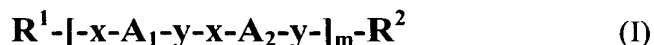




*Amendments to the Claims*

This listing of claims will replace all prior versions and listings of claims in the application.

1. (withdrawn) A method of treating a microbial infection in an animal in need thereof, said method comprising administering to the animal an effective amount of a pharmaceutical composition comprising an oligomer of Formula I:



or an acceptable salt or solvate thereof,

wherein:

x is  $\text{NR}^8$ ,  $-\text{N}(\text{R}^8)\text{N}(\text{R}^8)-$ , O, or S; y is C=O, C=S, O=S=O, or  $-\text{C}(=\text{O})\text{C}(=\text{O})-$ ; and  $\text{R}^8$  is hydrogen or alkyl;

$\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted arylene or optionally substituted heteroarylene, wherein:

- (i)  $\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s); or
- (ii)  $\text{A}_1$  is optionally substituted arylene or optionally substituted heteroarylene and  $\text{A}_2$  is a  $\text{C}_3$  to  $\text{C}_8$  cycloalkyl or  $-(\text{CH}_2)_q-$ , wherein q is 1 to 7, wherein  $\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of

one or more polar (PL) group(s) and one or more non-polar (NPL) group(s); or

- (iii) A<sub>2</sub> is optionally substituted arylene or optionally substituted heteroarylene, and A<sub>1</sub> is a C<sub>3</sub> to C<sub>8</sub> cycloalkyl or -(CH<sub>2</sub>)<sub>q</sub>-, wherein q is 1 to 7, wherein A<sub>1</sub> and A<sub>2</sub> are independently optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s);

R<sup>1</sup> is

- (i) hydrogen, a polar (PL) group, or a non-polar (NPL) group, and R<sup>2</sup> is -x-A<sub>1</sub>-y-R<sup>11</sup>, wherein R<sup>11</sup> is hydrogen, a polar (PL) group, or a non-polar (NPL) group; or
- (ii) R<sup>1</sup> and R<sup>2</sup> are independently hydrogen, a polar (PL) group, or a non-polar (NPL) group; or
- (iii) R<sup>1</sup> and R<sup>2</sup> together are a single bond;

NPL is a nonpolar group independently selected from the group consisting of -B(OR<sup>4</sup>)<sub>2</sub> and -(NR<sup>3'</sup>)<sub>q1NPL</sub>-U<sup>NPL</sup>-(CH<sub>2</sub>)<sub>pNPL</sub>-(NR<sup>3''</sup>)<sub>q2NPL</sub>-R<sup>4'</sup>, wherein:

R<sup>3</sup>, R<sup>3'</sup>, and R<sup>3''</sup> are independently selected from the group consisting of hydrogen, alkyl, and alkoxy;

R<sup>4</sup> and R<sup>4'</sup> are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, and heteroaryl, any of which is optionally substituted with one or more alkyl or halo groups;

$U^{NPL}$  is absent or selected from the group consisting of O, S, S(=O), S(=O)<sub>2</sub>, NR<sup>3</sup>,

-C(=O)-, -C(=O)-N=N-NR<sup>3</sup>-, -C(=O)-NR<sup>3</sup>-N=N-, -N=N-NR<sup>3</sup>-,

-C(=N-N(R<sup>3</sup>)<sub>2</sub>)-, -C(=NR<sup>3</sup>)-, -C(=O)O-, -C(=O)S-, -C(=S)-, -O-P(=O)<sub>2</sub>O-,

-R<sup>3</sup>O-, -R<sup>3</sup>S-, -S-C=N- and -C(=O)-NR<sup>3</sup>-O-, wherein groups with two

chemically nonequivalent termini can adopt both possible orientations;

the -(CH<sub>2</sub>)<sub>pNPL</sub>- alkylene chain is optionally substituted with one or more amino

or hydroxy groups, or is unsaturated;

pNPL is 0 to 8;

q1NPL and q2NPL are independently 0, 1 or 2;

PL is a polar group selected from the group consisting of halo, hydroxyethoxymethyl,

methoxyethoxymethyl, polyoxyethylene, and -(NR<sup>5'</sup>)<sub>q1PL</sub>-U<sup>PL</sup>-(CH<sub>2</sub>)<sub>pPL</sub>-(NR<sup>5'</sup>)<sub>q2PL</sub>-V,

wherein:

R<sup>5</sup>, R<sup>5'</sup>, and R<sup>5''</sup> are independently selected from the group consisting of

hydrogen, alkyl, and alkoxy;

$U^{PL}$  is absent or selected from the group consisting of O, S, S(=O), S(=O)<sub>2</sub>, NR<sup>5</sup>,

-C(=O)-, -C(=O)-N=N-NR<sup>5</sup>-, -C(=O)-NR<sup>5</sup>-N=N-, -N=N-NR<sup>5</sup>-,

-C(=N-N(R<sup>5</sup>)<sub>2</sub>)-, -C(=NR<sup>5</sup>)-, -C(=O)O-, -C(=O)S-, -C(=S)-, -O-P(=O)<sub>2</sub>O-,

-R<sup>5</sup>O-, -R<sup>5</sup>S-, -S-C=N- and -C(=O)-NR<sup>5</sup>-O-, wherein groups with two

chemically nonequivalent termini can adopt both possible orientations;

V is selected from the group consisting of nitro, cyano, amino, hydroxy, alkoxy,

alkylthio, alkylamino, dialkylamino, -NH(CH<sub>2</sub>)<sub>p</sub>NH<sub>2</sub> wherein p is 1 to 4,

-N(CH<sub>2</sub>CH<sub>2</sub>NH<sub>2</sub>)<sub>2</sub>, diazamino, amidino, guanidino, guanyl,

semicarbazone, aryl, heterocycle and heteroaryl, any of which is

optionally substituted with one or more of amino, halo, cyano, nitro, hydroxy,  $\text{-NH(CH}_2\text{)}_p\text{NH}_2$  wherein  $p$  is 1 to 4,  $\text{-N(CH}_2\text{CH}_2\text{NH}_2\text{)}_2$ , amidino, guanidino, guanyl, aminosulfonyl, aminoalkoxy, aminoalkythio, lower acylamino, or benzyloxycarbonyl;

the  $\text{-(CH}_2\text{)}_{p\text{PL}}$ - alkylene chain is optionally substituted with one or more amino or hydroxy groups, or is unsaturated;

$p\text{PL}$  is 0 to 8;

$q1\text{PL}$  and  $q2\text{PL}$  are independently 0, 1 or 2; and

$m$  is 1 to about 20;

and a pharmaceutically acceptable carrier or diluent.

2. (withdrawn) The method of claim 1, wherein  $x$  is  $\text{NR}^8$  and  $y$  is  $\text{C=O}$ .

3. (withdrawn) The method of claim 1, wherein  $A_1$  is substituted arylene,  $A_2$  is  $\text{-(CH}_2\text{)}_q\text{-}$ , and  $q$  is 1 or 2, and wherein one of  $A_1$  and  $A_2$  is substituted with one or more polar (PL) group(s), and the other of  $A_1$  and  $A_2$  is substituted with one or more non-polar (NPL) group(s).

4. (withdrawn) The method of claim 3, wherein  $A_1$  is substituted *m*-phenylene and  $q$  is 1, and wherein one of  $A_1$  and  $A_2$  is substituted with one polar (PL) group, and the other of  $A_1$  and  $A_2$  is substituted with one non-polar (NPL) group.

5. (withdrawn) The method of claim 1, wherein A<sub>2</sub> is substituted arylene, A<sub>1</sub> is -(CH<sub>2</sub>)<sub>q</sub>-, and q is 1 or 2, and wherein one of A<sub>1</sub> and A<sub>2</sub> is substituted with one or more polar (PL) group(s), and the other of A<sub>1</sub> and A<sub>2</sub> is substituted with one or more non-polar (NPL) group(s).

6. (withdrawn) The method of claim 5, wherein A<sub>2</sub> is substituted *m*-phenylene and q is 1, and wherein one of A<sub>1</sub> and A<sub>2</sub> is substituted with one polar (PL) group, and the other of A<sub>1</sub> and A<sub>2</sub> is substituted with one non-polar (NPL) group.

7. (withdrawn) The method of claim 1, wherein:

x is NR<sup>8</sup>, y is C=O, and R<sup>8</sup> is hydrogen;

A<sub>1</sub> is optionally substituted *o*-, *m*-, or *p*-phenylene and A<sub>2</sub> is -(CH<sub>2</sub>)<sub>q</sub>-, wherein q is 1, and wherein one of A<sub>1</sub> and A<sub>2</sub> is substituted with one or two polar (PL) group(s), and the other of A<sub>1</sub> and A<sub>2</sub> is substituted with one or two non-polar (NPL) group(s);  
or

A<sub>2</sub> is optionally substituted *o*-, *m*-, or *p*-phenylene and A<sub>1</sub> is -(CH<sub>2</sub>)<sub>q</sub>-, wherein q is 1, and wherein one of A<sub>1</sub> and A<sub>2</sub> is substituted with one or two polar (PL) group(s), and the other of A<sub>1</sub> and A<sub>2</sub> is substituted with one or two non-polar (NPL) group(s);

R<sup>1</sup> and R<sup>2</sup> are independently hydrogen, a polar (PL) group, or a non-polar (NPL) group;

NPL is -(NR<sup>3'</sup>)<sub>q1NPL</sub>-U<sup>NPL</sup>-(CH<sub>2</sub>)<sub>pNPL</sub>-(NR<sup>3''</sup>)<sub>q2NPL</sub>-R<sup>4'</sup>, wherein:

R<sup>4'</sup> is selected from the group consisting of C<sub>1</sub>-C<sub>10</sub> alkyl, C<sub>3</sub>-C<sub>18</sub> branched alkyl, C<sub>2</sub>-C<sub>10</sub> alkenyl, C<sub>2</sub>-C<sub>10</sub> alkynyl, and C<sub>6</sub>-C<sub>10</sub> aryl, any of which is optionally substituted with one or more alkyl or halo groups;

$U^{NPL}$  is absent or selected from the group consisting of NH, -C(=O)-, O and S;

the  $-(CH_2)_{pNPL}-$  alkylene chain is optionally substituted with one or more amino groups;

$pNPL$  is 0 to 8;

$q1NPL$  and  $q2NPL$  are 0;

PL is  $-(NR^{5'})_{q1PL}-U^{PL}-(CH_2)_{pPL}-(NR^{5'})_{q2PL}-V$ , wherein:

$U^{PL}$  is absent or selected from the group consisting of O, S, NH, and -C(=O);

V is selected from the group consisting of amino,  $C_1-C_6$  alkylamino,  $-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , diazamino, amidino, and guanidino;

the  $-(CH_2)_{pPL}-$  alkylene chain is optionally substituted with one or more amino groups;

$pPL$  is 0 to 8;

$q1PL$  and  $q2PL$  are 0; and

m is 4 or 5.

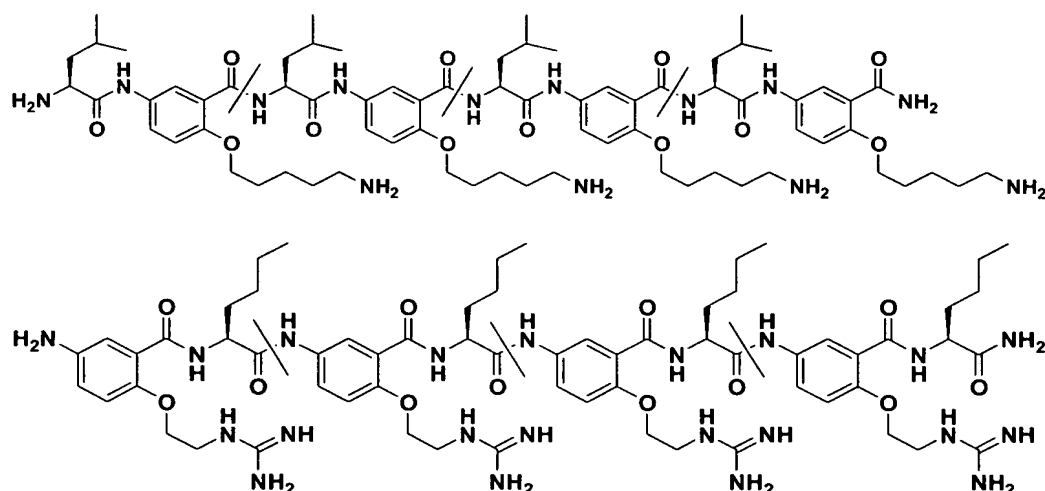
8. (withdrawn) The method of claim 7, wherein  $A_1$  is optionally substituted *m*-phenylene,  $A_2$  is  $-(CH_2)_q-$ , q is 1, and wherein one of  $A_1$  and  $A_2$  is substituted with one polar (PL) group, and the other of  $A_1$  and  $A_2$  is substituted with one non-polar (NPL) group.

9. (withdrawn) The method of claim 7, wherein  $A_2$  is optionally substituted *m*-phenylene,  $A_1$  is  $-(CH_2)_q-$ , q is 1, and wherein one of  $A_1$  and  $A_2$  is substituted with one

polar (PL) group, and the other of A<sub>1</sub> and A<sub>2</sub> is substituted with one non-polar (NPL) group.

10. (withdrawn) The method of claim 9, wherein A<sub>1</sub> substituted with one non-polar (NPL) group, and A<sub>2</sub> is substituted with one polar (NPL) group.

11. (withdrawn) The method of claim 1, wherein the oligomer is one of



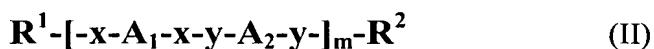
12. (withdrawn) The method of claim 1, wherein the microbial infection is a bacterial infection, a fungal infection, or a viral infection.

13. (cancelled)

14. (cancelled)

15. (withdrawn) A method of providing an antidote to low molecular weight heparin overdose in an animal, said method comprising administering to the animal an effective amount of a pharmaceutical composition comprising an oligomer of claim 1.

16. (currently amended) A method of treating a microbial infection in an animal in need thereof, said method comprising administering to the animal an effective amount of a pharmaceutical composition comprising an amphiphilic oligomer of Formula II:



or an acceptable salt or solvate thereof,

wherein:

x is  $\text{NR}^8$ , O, S,  $-\text{N}(\text{R}^8)\text{N}(\text{R}^8)-$ ,  $-\text{N}(\text{R}^8)-(\text{N}=\text{N})-$ ,  $-(\text{N}=\text{N})-\text{N}(\text{R}^8)-$ ,  $-\text{C}(\text{R}^7\text{R}^7')\text{NR}^8-$ ,  $-\text{C}(\text{R}^7\text{R}^7')\text{O}-$ , or  $-\text{C}(\text{R}^7\text{R}^7')\text{S}-$ ; and y is C=O, C=S, O=S=O,  $-\text{C}(=\text{O})\text{C}(=\text{O})-$ ,  $\text{C}(\text{R}^6\text{R}^6')\text{C}=\text{O}$  or  $\text{C}(\text{R}^6\text{R}^6')\text{C}=\text{S}$ ; or

x and y are taken together to be pyromellitic diimide;

wherein  $\text{R}^8$  is hydrogen or alkyl;  $\text{R}^7$  and  $\text{R}^{7'}$  are independently hydrogen or alkyl, or  $\text{R}^7$  and  $\text{R}^{7'}$  together are  $-(\text{CH}_2)_p-$ , wherein p is 4 to 8; and  $\text{R}^6$  and  $\text{R}^{6'}$  are independently hydrogen or alkyl, or  $\text{R}^6$  and  $\text{R}^{6'}$  together are  $(\text{CH}_2)_2\text{NR}^{12}(\text{CH}_2)_2$ , wherein  $\text{R}^{12}$  is hydrogen,  $-\text{C}(=\text{N})\text{CH}_3$  or  $\text{C}(=\text{NH})-\text{NH}_2$ ;

$\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted arylene or optionally substituted heteroarylene, wherein  $\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s);



R<sup>1</sup> is

- (i) hydrogen, a polar group (PL), or a non-polar group (NPL), and R<sup>2</sup> is  
 $-x-A_1-x-R^1$ , wherein A<sub>1</sub> is as defined above and is optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s); or
- (ii) hydrogen, a polar group (PL), or a non-polar group (NPL), and R<sup>2</sup> is  $-x-A'-x-R^1$ , wherein A' is aryl or heteroaryl and is optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s);
- (iii)  $-y-A_2-y-R^2$ , and R<sup>2</sup> is hydrogen, a polar group (PL), or a non-polar group (NPL); or
- (iv)  $-y-A'$  and R<sup>2</sup> is  $-x-A'$ , wherein A' is aryl or heteroaryl and is optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s); or
- (v) R<sup>1</sup> and R<sup>2</sup> are independently a polar group (PL) or a non-polar group (NPL);  
 or
- (vi) R<sup>1</sup> and R<sup>2</sup> together form a single bond;

NPL is a nonpolar group independently selected from the group consisting of

$-B(OR^4)_2$  and  $-(NR^{3'})_{q1NPL}-U^{NPL}-(CH_2)_{pNPL}-(NR^{3''})_{q2NPL}-R^{4'}$ , wherein:

$R^3$ ,  $R^{3'}$ , and  $R^{3''}$  are independently selected from the group consisting of hydrogen, alkyl, and alkoxy;

$R^4$  and  $R^{4'}$  are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, and heteroaryl, any of which is optionally substituted with one or more alkyl or halo groups;

$U^{NPL}$  is absent or selected from the group consisting of O, S, S(=O), S(=O)<sub>2</sub>, NR<sup>3</sup>, -C(=O)-, -C(=O)-N=N-NR<sup>3</sup>-, -C(=O)-NR<sup>3</sup>-N=N-, -N=N-NR<sup>3</sup>-, -C(=N-N(R<sup>3</sup>)<sub>2</sub>)-, -C(=NR<sup>3</sup>)-, -C(=O)O-, -C(=O)S-, -C(=S)-, -O-P(=O)<sub>2</sub>O-, -R<sup>3</sup>O-, -R<sup>3</sup>S-, -S-C=N- and -C(=O)-NR<sup>3</sup>-O-, wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

the -(CH<sub>2</sub>)<sub>pNPL</sub>- alkylene chain is optionally substituted with one or more amino or hydroxy groups, or is unsaturated;

pNPL is 0 to 8;

q1NPL and q2NPL are independently 0, 1 or 2;

PL is a polar group selected from the group consisting of halo, hydroxyethoxymethyl, methoxyethoxymethyl, polyoxyethylene, and -(NR<sup>5'</sup>)<sub>q1PL</sub>-U<sup>PL</sup>-(CH<sub>2</sub>)<sub>pPL</sub>-(NR<sup>5'</sup>)<sub>q2PL</sub>-V, wherein:

$R^5$ ,  $R^{5'}$ , and  $R^{5''}$  are independently selected from the group consisting of hydrogen, alkyl, and alkoxy;

$U^{PL}$  is absent or selected from the group consisting of O, S, S(=O), S(=O)<sub>2</sub>, NR<sup>5</sup>, -C(=O)-, -C(=O)-N=N-NR<sup>5</sup>-, -C(=O)-NR<sup>5</sup>-N=N-, -N=N-NR<sup>5</sup>-, -C(=N-N(R<sup>5</sup>)<sub>2</sub>)-, -C(=NR<sup>5</sup>)-, -C(=O)O-, -C(=O)S-, -C(=S)-, -O-P(=O)<sub>2</sub>O-,

$-R^5O-$ ,  $-R^5S-$ ,  $-S-C=N-$  and  $-C(=O)-NR^5-O-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

V is selected from the group consisting of nitro, cyano, amino, hydroxy, alkoxy, alkylthio, alkylamino, dialkylamino,

$-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , diazamino, amidino, guanidino, guanyl, semicarbazone, aryl, heterocycle and heteroaryl, any of which is optionally substituted with one or more of amino, halo, cyano, nitro, hydroxy,  $-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , amidino, guanidino, guanyl, aminosulfonyl, aminoalkoxy, aminoalkylthio, lower acylamino, or benzyloxycarbonyl;

the  $-(CH_2)_{pPL}-$  alkylene chain is optionally substituted with one or more amino or hydroxy groups, or is unsaturated;

pPL is 0 to 8;

q1PL and q2PL are independently 0, 1 or 2; and

m is 1 to about 20;

and a pharmaceutically acceptable carrier or diluent.

17. (original) The method of claim 16, wherein:

x is  $NR^8$ , y is  $C=O$ , and  $R^8$  is hydrogen or alkyl;

$A_1$  and  $A_2$  are independently optionally substituted *o*-, *m*-, or *p*-phenylene or pyrimidinylene, wherein  $A_1$  and  $A_2$  are independently optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a

combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s);

$R^1$  is hydrogen, a polar group (PL), or a non-polar group (NPL), and  $R^2$  is  $-x-A_1-x-R^1$ , wherein  $A_1$  is as defined above and is optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s);

NPL is  $-(NR^{3'})_{q1NPL}-U^{NPL}-(CH_2)_{pNPL}-(NR^{3''})_{q2NPL}-R^{4'}$ , wherein:

$R^3$ ,  $R^{3'}$ , and  $R^{3''}$  are independently selected from the group consisting of hydrogen,  $C_1$ - $C_6$  alkyl, and  $C_1$ - $C_6$  alkoxy;

$R^{4'}$  is selected from the group consisting of hydrogen,  $C_1$ - $C_{10}$  alkyl,  $C_3$ - $C_{18}$  branched alkyl,  $C_2$ - $C_{10}$  alkenyl,  $C_2$ - $C_{10}$  alkynyl,  $C_3$ - $C_8$  cycloalkyl,  $C_6$ - $C_{10}$  aryl, and heteroaryl, any of which is optionally substituted with one or more  $C_1$ - $C_6$  alkyl or halo groups;

$U^{NPL}$  is absent or selected from the group consisting of O, S, NH,  $-C(=O)-$ ,  $-C(=O)-N=N-NH-$ ,  $-C(=O)-NH-N=N-$ ,  $-N=N-NH-$ ,  $-C(=N-N(R^3)_2)-$ ,  $-C(=NR^3)-$ ,  $-C(=O)O-$ ,  $-R^3S-$  and  $-R^3O-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

the  $-(CH_2)_{pNPL}-$  alkylene chain is optionally substituted with one or more amino or hydroxy groups;

$pNPL$  is 0 to 6;

$q1NPL$  and  $q2NPL$  are 0;

PL is  $-(NR^{5'})_{q1PL}-U^{PL}-(CH_2)_{pPL}-(NR^{5'})_{q2PL}-V$ , wherein:

$R^5$ ,  $R^{5'}$ , and  $R^{5''}$  are independently selected from the group consisting of hydrogen,  $C_1$ - $C_6$  alkyl, and  $C_1$ - $C_6$  alkoxy;

$U^{PL}$  is absent or selected from the group consisting of O, S, NH,  $-C(=O)-$ ,  $-C(=O)-N=N-NH-$ ,  $-C(=O)-NH-N=N-$ ,  $-N=N-NH-$ ,  $-C(=N-N(R^5)_2)-$ ,  $-C(=NR^5)-$ ,  $-C(=O)O-$ ,  $-R^5O-$ , and  $-R^5S-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

V is selected from the group consisting of nitro, cyano, amino, hydroxy,  $C_1$ - $C_6$  alkoxy,  $C_1$ - $C_6$  alkylthio,  $C_1$ - $C_6$  alkylamino,  $C_1$ - $C_6$  dialkylamino,  $-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , diazamino, amidino, guanidino, guanyl, semicarbazone,  $C_6$ - $C_{10}$  aryl, heterocycle, and heteroaryl;

the  $-(CH_2)_{pPL}-$  alkylene chain is optionally substituted with one or more amino or hydroxy groups;

pPL is 0 to 6;

q1PL and q2PL are 0; and

m is 1 to 10.

18. (original) The method of claim 16, wherein x is O and y is C=O.

19. (original) The method of claim 16, wherein x is  $-N(R^8)N(R^8)-$ , y is C=O, and  $R^8$  is hydrogen.

20. (original) The method of claim 16, wherein A<sub>1</sub> and A<sub>2</sub> are independently optionally substituted *o*-, *m*-, or *p*-phenylene.

21. (original) The method of 20, wherein A<sub>1</sub> and A<sub>2</sub> are independently optionally substituted *m*-phenylene.

22. (original) The method of claim 16, wherein one of A<sub>1</sub> and A<sub>2</sub> is *o*-, *m*-, or *p*-phenylene, and the other of A<sub>1</sub> and A<sub>2</sub> is heteroarylene.

23. (original) The method of claim 22, wherein one of A<sub>1</sub> and A<sub>2</sub> is *m*-phenylene, and the other of A<sub>1</sub> and A<sub>2</sub> is pyrimidinylene.

24. (original) The method of claim 16, wherein A<sub>1</sub> and A<sub>2</sub> are independently optionally substituted arylene or optionally substituted heteroarylene, and one of A<sub>1</sub> and A<sub>2</sub> is substituted with one or more polar (PL) group(s) and one or more nonpolar (NPL) group(s) and the other of A<sub>1</sub> and A<sub>2</sub> is unsubstituted.

25. (original) The method of claim 24, wherein A<sub>1</sub> and A<sub>2</sub> are optionally substituted *m*-phenylene, and one of A<sub>1</sub> and A<sub>2</sub> is substituted with one polar (PL) group and one nonpolar (NPL) group and the other of A<sub>1</sub> and A<sub>2</sub> is unsubstituted.

26. (original) The method of claim 16, wherein R<sup>1</sup> is hydrogen, a polar group (PL), or a non-polar group (NPL), and R<sup>2</sup> is -x-A<sub>1</sub>-x-R<sup>1</sup>, wherein A<sub>1</sub> is as defined in claim 16 and is

substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s).

27. (original) The method of claim 26, wherein  $R^1$  is a polar (PL) group and  $R^2$  is  $-x-A_1-x-R^1$ , where  $A_1$  is substituted with one or two polar (PL) group(s) and one non-polar (NPL) group.

28. (original) The method of claim 16, wherein:

NPL is  $-(NR^{3'})_{q1NPL}-U^{NPL}-(CH_2)_{pNPL}-(NR^{3''})_{q2NPL}-R^{4'}$ , and  $R^3$ ,  $R^{3'}$ ,  $R^{3''}$ ,  $R^{4'}$ ,  $U^{NPL}$ ,  $pNPL$ ,  $q1NPL$  and  $q2NPL$  are as defined in claim 16.

29. (original) The method of claim 28, wherein  $R^3$ ,  $R^{3'}$ , and  $R^{3''}$  are independently hydrogen,  $C_1$ - $C_6$  alkyl, or  $C_1$ - $C_6$  alkoxy.

30. (original) The method of claim 29, wherein  $R^3$ ,  $R^{3'}$ , and  $R^{3''}$  are hydrogen.

31. (original) The method of claim 28, wherein  $R^{4'}$  is  $C_1$ - $C_{10}$  alkyl,  $C_3$ - $C_{18}$  branched alkyl,  $C_2$ - $C_{10}$  alkenyl,  $C_2$ - $C_{10}$  alkynyl, or  $C_6$ - $C_{10}$  aryl.

32. (original) The method of claim 31, wherein  $R^{4'}$  is phenyl, methyl, ethyl, *n*-propyl, isopropyl, *n*-butyl, *tert*-butyl, or *n*-pentyl.

33. (original) The method of claim 28, wherein  $U^{NPL}$  is O, S, NH,  $-C(=O)-$ ,  $-C(=O)-N=N-NH-$ ,  $-C(=O)-NH-N=N-$ ,  $-N=N-NH-$ ,  $-C(=N-N(R^3)_2)-$ ,  $-C(=NR^3)-$ ,  $-C(=O)O-$ ,  $-R^3S-$  or  $-R^3O-$ .
34. (original) The method of claim 33, wherein  $U^{NPL}$  is  $-C(=O)-$ .
35. (original) The method of claim 33, wherein  $U^{NPL}$  is absent.
36. (original) The method of claim 16, wherein NPL is *n*-propyl, isopropyl, *n*-butyl, or *tert*-butyl.
37. (original) The method of claim 28, wherein:  
 $pNPL$  is 0 to 2; and  $q1NPL$  and  $q2NPL$  are independently 0 or 1.
38. (original) The method of claim 28, wherein the  $-(CH_2)_{pNPL}-$  alkylene chain in NPL is substituted with one or more amino groups.
39. (original) The method of claim 16, wherein:  
PL is  $-(NR^{5'})_{q1PL}-U^{PL}-(CH_2)_{pPL}-(NR^{5''})_{q2PL}-V$ , and  $R^5$ ,  $R^{5'}$ ,  $R^{5''}$ ,  $V$ ,  $U^{PL}$ ,  $pPL$ ,  $q1PL$  and  $q2PL$  are as defined in claim 16.
40. (original) The method of claim 39, wherein  $R^5$ ,  $R^{5'}$ , and  $R^{5''}$  are independently hydrogen,  $C_1-C_6$  alkyl, or  $C_1-C_6$  alkoxy.



41. (original) The method of claim 39, wherein  $U^{PL}$  is O, S, NH,  $-C(=O)-$ ,  $-C(=O)-N=N-NH-$ ,  $-C(=O)-NH-N=N-$ ,  $-N=N-NH-$ ,  $-C(=N-N(R^5)_2)-$ ,  $-C(=NR^5)-$ ,  $-C(=O)O-$ ,  $-R^5S-$  or  $-R^5O-$ .
42. (original) The method of claim 41, wherein  $U^{PL}$  is O, S,  $-C(=O)$ , or is absent.
43. (original) The method of claim 39, wherein V is amino,  $C_1-C_6$  alkylamino,  $-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , diazamino, amidino, or guanidino.
44. (original) The method of claim 39, wherein  $p_{PL}$  is 2 to 4, and  $q1_{PL}$  and  $q2_{PL}$  are 0.
45. (original) The method of claim 39, wherein the  $-(CH_2)_{p_{PL}}-$  alkylene chain in PL is substituted with one or more amino groups.
46. (original) The method of claim 16, wherein m is 1 to about 5.
47. (original) The method of claim 16, wherein m is 1, 2 or 3.
48. (original) The method of claim 16, wherein:  
x is  $NR^8$ , y is  $C=O$ , and  $R^8$  is hydrogen;  
 $A_1$  and  $A_2$  are independently optionally substituted *m*-phenylene, wherein

- (i) one of  $A_1$  and  $A_2$  is substituted with one polar (PL) group and one nonpolar (NPL) group and the other of  $A_1$  and  $A_2$  is unsubstituted; or
- (ii) one of  $A_1$  and  $A_2$  is substituted with one polar (PL) group and one nonpolar (NPL) group and the other of  $A_1$  and  $A_2$  is substituted with one or two polar (PL) group(s);

$R^1$  is hydrogen or a polar group (PL), and  $R^2$  is  $-x-A_1-x-R^1$ , wherein  $A_1$  is as defined above and is optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s);

NPL is  $-(NR^{3'})_{q1NPL}-U^{NPL}-(CH_2)_{pNPL}-(NR^{3''})_{q2NPL}-R^{4'}$ , wherein:

$R^3$ ,  $R^{3'}$ , and  $R^{3''}$  are independently selected from the group consisting of hydrogen,  $C_1$ - $C_6$  alkyl, and  $C_1$ - $C_6$  alkoxy;

$R^{4'}$  is selected from the group consisting of hydrogen,  $C_1$ - $C_{10}$  alkyl,  $C_3$ - $C_{18}$  branched alkyl,  $C_2$ - $C_{10}$  alkenyl,  $C_2$ - $C_{10}$  alkynyl,  $C_3$ - $C_8$  cycloalkyl,  $C_6$ - $C_{10}$  aryl, and heteroaryl, any of which is optionally substituted with one or more  $C_1$ - $C_6$  alkyl or halo groups;

$U^{NPL}$  is absent or selected from the group consisting of O, S, NH,  $-C(=O)-$ ,  $-R^3S-$  and  $-R^3O-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

the  $-(CH_2)_{pNPL}-$  alkylene chain is optionally substituted with one or more amino groups;

$pNPL$  is 0 to 6;

$q1NPL$  and  $q2NPL$  are 0;

PL is  $-(NR^{5'})_{q1PL}-U^{PL}-(CH_2)_{pPL}-(NR^{5'})_{q2PL}-V$ , wherein:

$R^5$ ,  $R^{5'}$ , and  $R^{5''}$  are independently selected from the group consisting of hydrogen,  $C_1-C_6$  alkyl, and  $C_1-C_6$  alkoxy;

$U^{PL}$  is absent or selected from the group consisting of O, S, NH,  $-C(=O)-$ ,  $-R^5O-$ , and  $-R^5S-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

V is selected from the group consisting of amino, hydroxy,  $C_1-C_6$  alkylamino,  $-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , diazamino, amidino, and guanidino;

the  $-(CH_2)_{pPL}-$  alkylene chain is optionally substituted with one or more amino groups;

pPL is 0 to 6;

q1PL and q2PL are 0; and

m is 1, 2 or 3.

49. (withdrawn - currently amended) A method of treating a microbial infection in an animal in need thereof, said method comprising administering to the animal an effective amount of a pharmaceutical composition comprising an amphiphilic oligomer of Formula IIa:



or an acceptable salt or solvate thereof,

wherein:

x is  $\text{NR}^8$ , O, S, or  $-\text{N}(\text{R}^8)\text{N}(\text{R}^8)-$ ; and y is C=O, C=S, or O=S=O; wherein  $\text{R}^8$  is hydrogen or alkyl;

$\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted arylene or optionally substituted heteroarylene, wherein  $\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s);

$\text{R}^1$  is a polar group (PL) or a non-polar group (NPL); and  $\text{R}^2$  is  $\text{R}^1$ ;

NPL is a nonpolar group independently selected from the group consisting of

$-\text{B}(\text{OR}^4)_2$  and  $-(\text{NR}^{3'})_{q1}\text{NPL}-\text{U}^{\text{NPL}}-(\text{CH}_2)_{p\text{NPL}}-(\text{NR}^{3''})_{q2}\text{NPL}-\text{R}^{4'}$ , wherein:

$\text{R}^3$ ,  $\text{R}^{3'}$ , and  $\text{R}^{3''}$  are independently selected from the group consisting of hydrogen, alkyl, and alkoxy;

$\text{R}^4$  and  $\text{R}^{4'}$  are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, and heteroaryl, any of which is optionally substituted with one or more alkyl or halo groups;

$\text{U}^{\text{NPL}}$  is absent or selected from the group consisting of O, S, S(=O), S(=O)<sub>2</sub>,  $\text{NR}^3$ ,  $-\text{C}(=\text{O})-$ ,  $-\text{C}(=\text{O})-\text{N}=\text{N}-\text{NR}^3-$ ,  $-\text{C}(=\text{O})-\text{NR}^3-\text{N}=\text{N}-$ ,  $-\text{N}=\text{N}-\text{NR}^3-$ ,  $-\text{C}(=\text{N}-\text{N}(\text{R}^3)_2)-$ ,  $-\text{C}(=\text{NR}^3)-$ ,  $-\text{C}(=\text{O})\text{O}-$ ,  $-\text{C}(=\text{O})\text{S}-$ ,  $-\text{C}(=\text{S})-$ ,  $-\text{O}-\text{P}(=\text{O})_2\text{O}-$ ,  $-\text{R}^3\text{O}-$ ,  $-\text{R}^3\text{S}-$ ,  $-\text{S}-\text{C}=\text{N}-$  and  $-\text{C}(=\text{O})-\text{NR}^3-\text{O}-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

the  $-(CH_2)_{pNPL}-$  alkylene chain is optionally substituted with one or more amino

or hydroxy groups, or is unsaturated;

$pNPL$  is 0 to 8;

$q1NPL$  and  $q2NPL$  are independently 0, 1 or 2;

$PL$  is a polar group selected from the group consisting of halo, hydroxyethoxymethyl, methoxyethoxymethyl, polyoxyethylene, and

$-(NR^{5'})_{q1PL}-U^{PL}-(CH_2)_{pPL}-(NR^{5'})_{q2PL}-V$ , wherein:

$R^5$ ,  $R^{5'}$ , and  $R^{5''}$  are independently selected from the group consisting of hydrogen, alkyl, and alkoxy;

$U^{PL}$  is absent or selected from the group consisting of O, S,  $S(=O)$ ,  $S(=O)_2$ ,  $NR^5$ ,

$-C(=O)-$ ,  $-C(=O)-N=N-NR^5-$ ,  $-C(=O)-NR^5-N=N-$ ,  $-N=N-NR^5-$ ,

$-C(=N-N(R^5)_2)-$ ,  $-C(=NR^5)-$ ,  $-C(=O)O-$ ,  $-C(=O)S-$ ,  $-C(=S)-$ ,  $-O-P(=O)_2O-$ ,

$-R^5O-$ ,  $-R^5S-$ ,  $-S-C=N-$  and  $-C(=O)-NR^5-O-$ , wherein groups with two

chemically nonequivalent termini can adopt both possible orientations;

$V$  is selected from the group consisting of nitro, cyano, amino, hydroxy, alkoxy,

alkylthio, alkylamino, dialkylamino,  $-NH(CH_2)_pNH_2$  wherein  $p$  is 1 to 4,

$-N(CH_2CH_2NH_2)_2$ , diazamino, amidino, guanidino, guanyl,

semicarbazone, aryl, heterocycle and heteroaryl, any of which is

optionally substituted with one or more of amino, halo, cyano, nitro,

hydroxy,  $-NH(CH_2)_pNH_2$  wherein  $p$  is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , amidino,

guanidino, guanyl, aminosulfonyl, aminoalkoxy, aminoalkythio, lower

acylamino, or benzyloxycarbonyl;

the  $-(CH_2)_{pPL}$ - alkylene chain is optionally substituted with one or more amino or

hydroxy groups, or is unsaturated;

pPL is 0 to 8; and

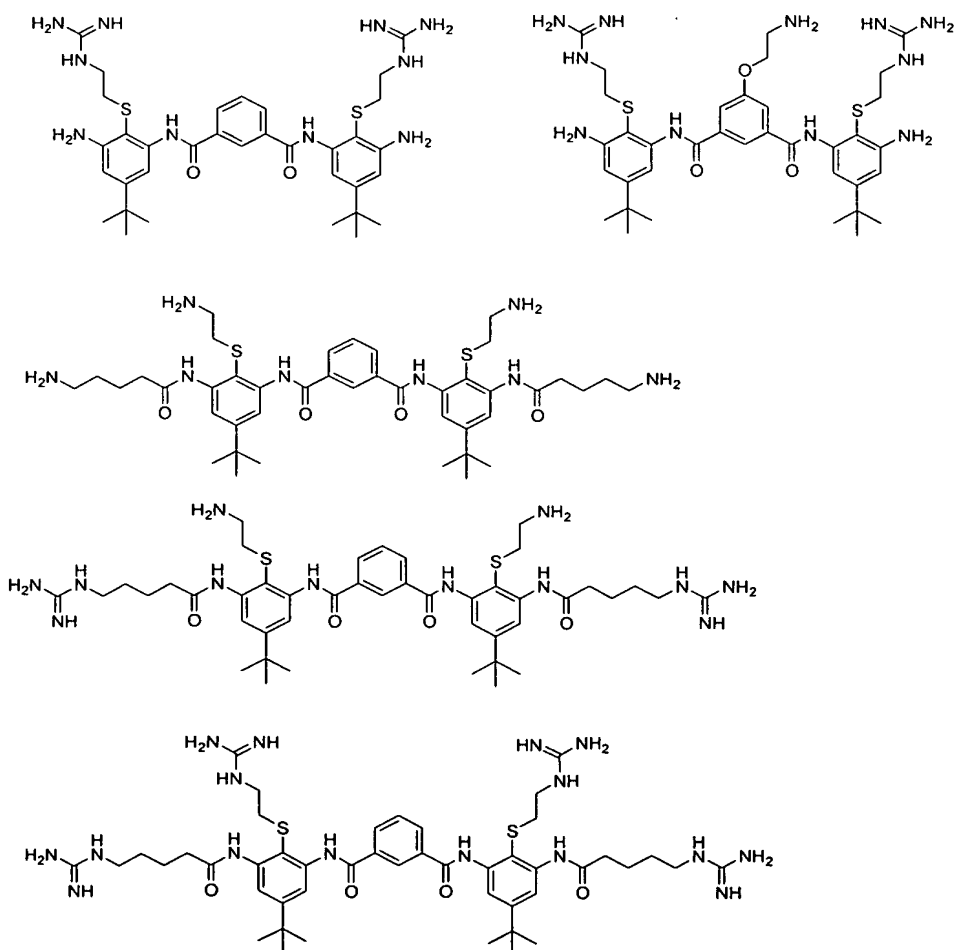
q1PL and q2PL are independently 0, 1 or 2;

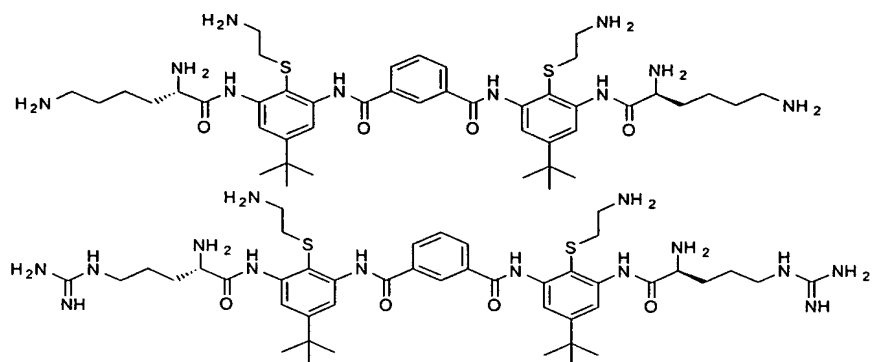
and a pharmaceutically acceptable carrier or diluent.

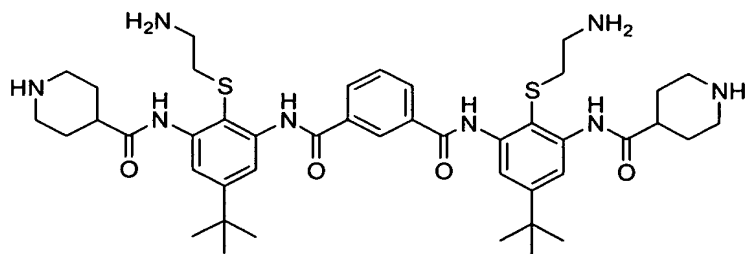
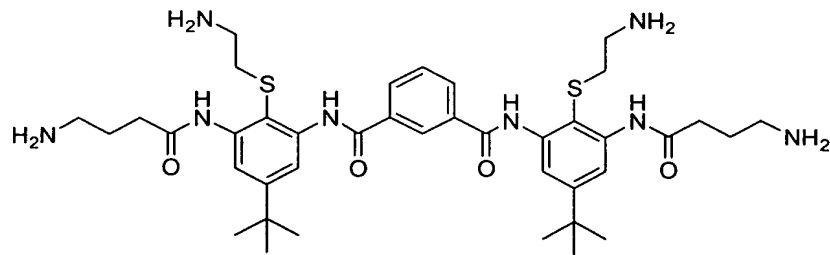
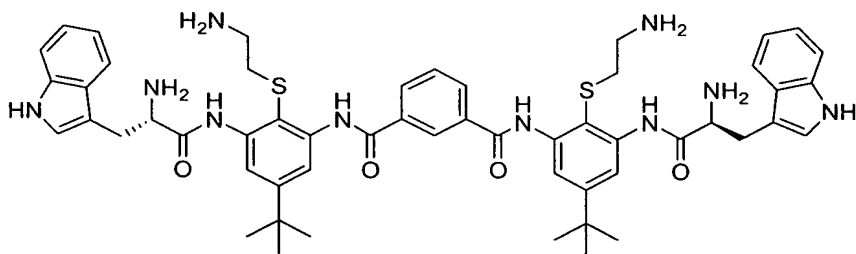
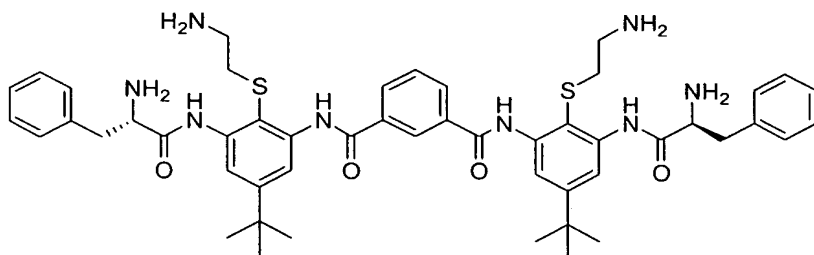
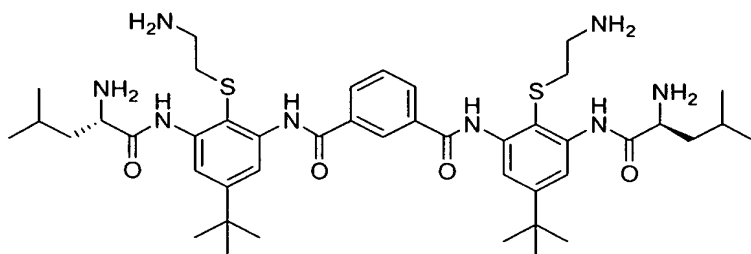
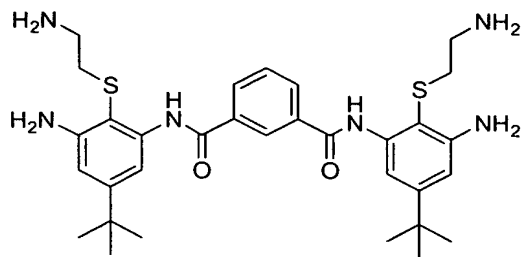
50. (withdrawn - currently amended)

The method of claim 49, wherein the

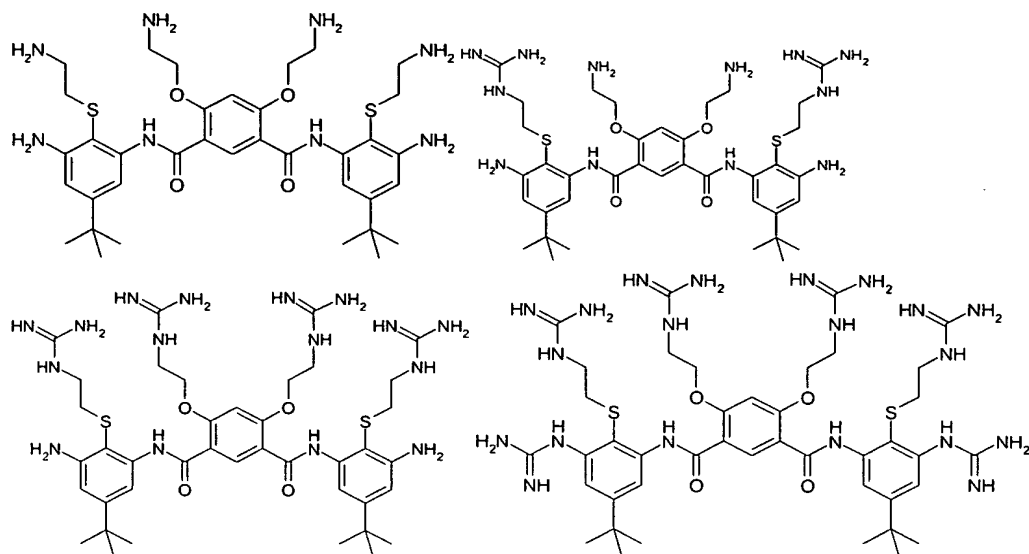
amphiphilic oligomer is selected from the group consisting of:

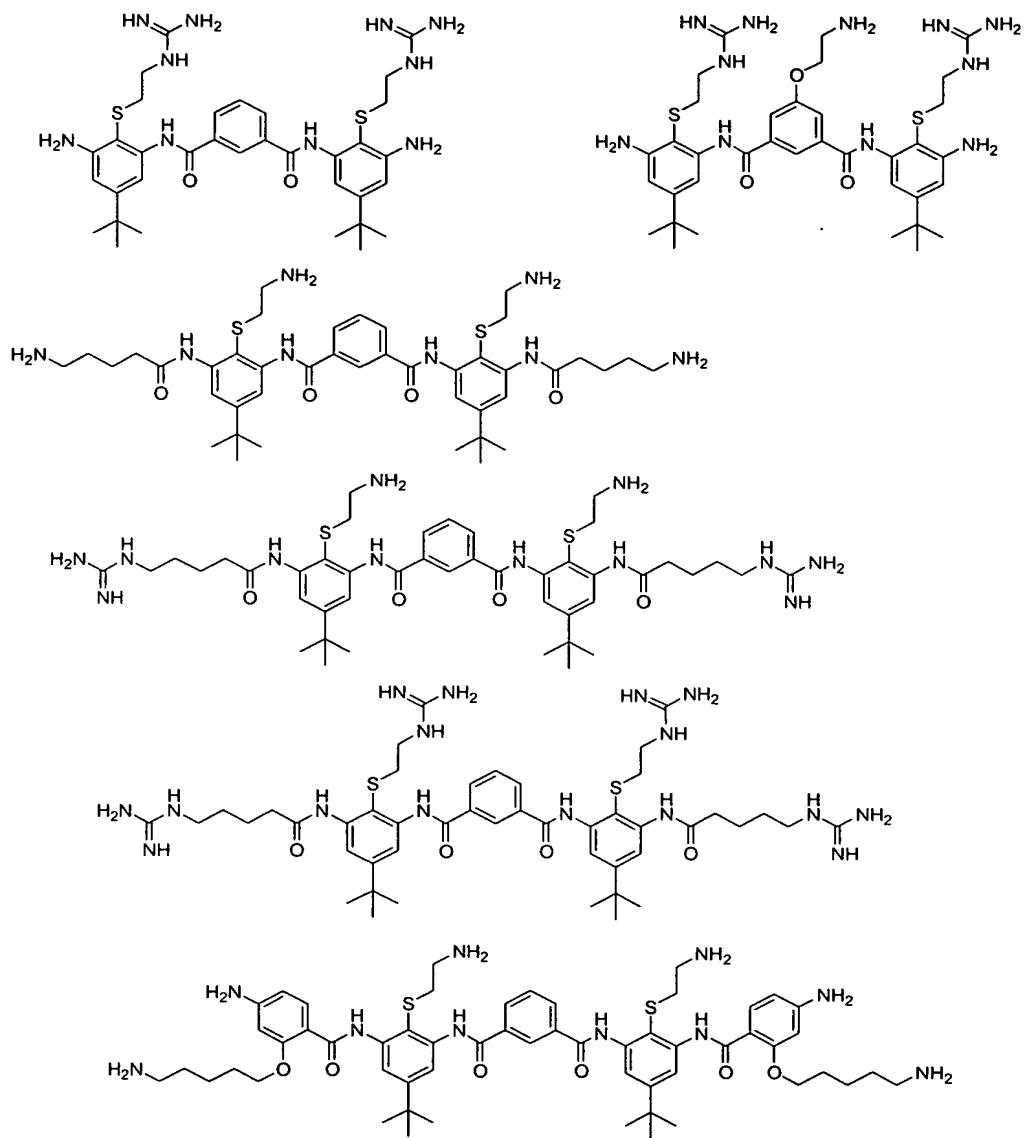


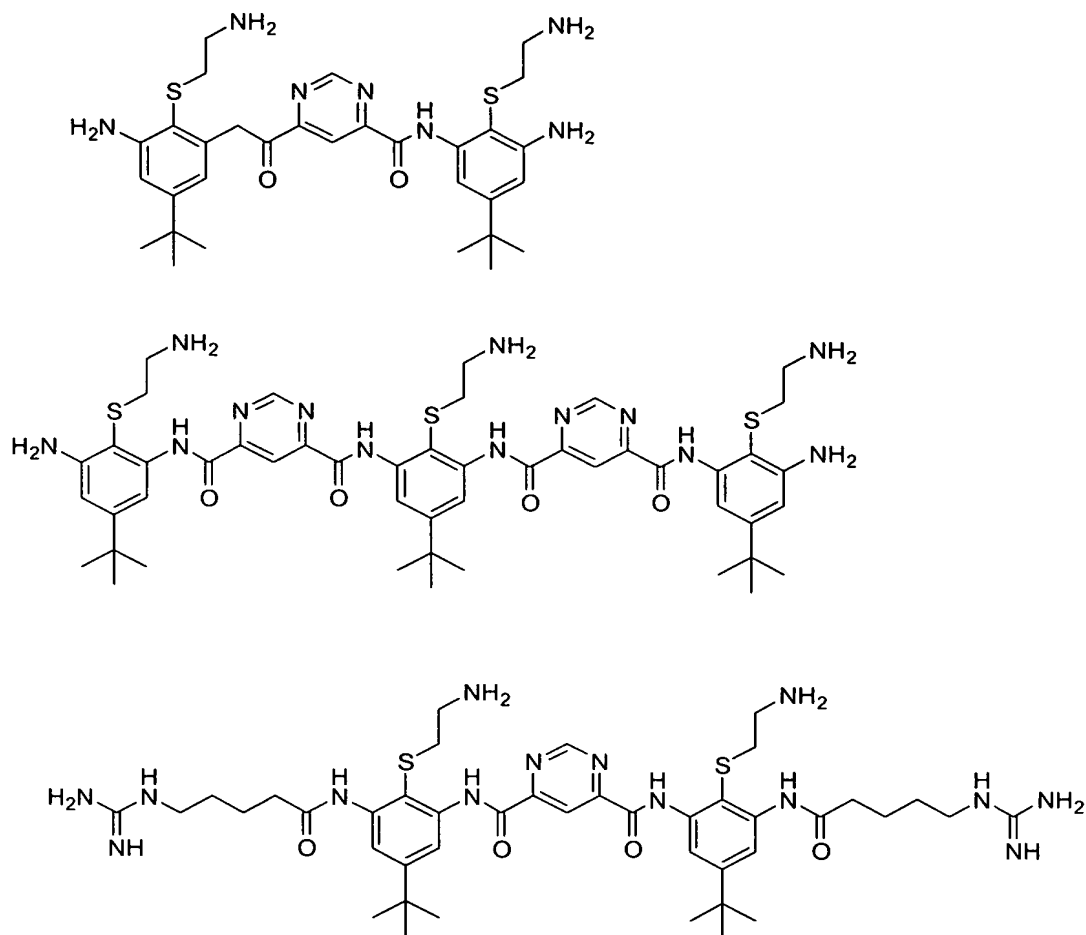












51. (withdrawn) The method of claim 16 or claim 49, wherein the microbial infection is a bacterial infection, a fungal infection, or a viral infection.

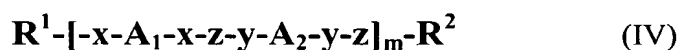
52. (cancelled)

53. (cancelled)

54. (withdrawn) A method of providing an antidote to low molecular weight heparin overdose in an animal, said method comprising administering to the animal an

effective amount of a pharmaceutical composition comprising an oligomer of claim 16 or claim 49.

55. (withdrawn) A method of treating a microbial infection in an animal in need thereof, said method comprising administering to the animal an effective amount of a pharmaceutical composition comprising an oligomer of Formula IV:



or an acceptable salt or solvate thereof,

wherein:

x is  $\text{NR}^8$ ,  $\text{-NR}^8\text{NR}^8\text{-}$ ,  $\text{C=O}$ , or  $\text{O}$ ; y is  $\text{NR}^8$ ,  $\text{-NR}^8\text{NR}^8\text{-}$ ,  $\text{C=O}$ ,  $\text{S}$ , or  $\text{O}$ ; and  $\text{R}^8$  is hydrogen or alkyl;

z is  $\text{C=O}$ ,  $\text{C=S}$ ,  $\text{O=S=O}$ ,  $\text{-NR}^8\text{NR}^8\text{-}$ , or  $\text{-C(=O)C(=O)-}$  ;

$\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted arylene or optionally substituted heteroarylene, wherein  $\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s);

$\text{R}^1$  is

(i) hydrogen, a polar group (PL), or a non-polar group (NPL), and  $\text{R}^2$  is

$\text{-x-A}_1\text{-x-R}^1$ , wherein  $\text{A}_1$  is as defined above and is optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s); or

- (ii) hydrogen, a polar group (PL), or a non-polar group (NPL), and  $R^2$  is  $-x-A_1-x-z-y-A_2-y-R^1$ , wherein  $A_1$  and  $A_2$  are as defined above, and each of which is optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s); or
- (iii) hydrogen, a polar group (PL), or a non-polar group (NPL), and  $R^2$  is  $-x-A'-x-R^1$ , wherein  $A'$  is aryl or heteroaryl and is optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s); or
- (iv) hydrogen, a polar group (PL), or a non-polar group (NPL), and  $R^2$  is  $-x-A_1-x-z-y-A'-y-R^1$ , wherein  $A_1$  is as defined above,  $A'$  is aryl or heteroaryl, and each of  $A_1$  and  $A'$  is optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s); or
- (v)  $-z-y-A'$  and  $R^2$  is hydrogen, a polar group (PL), or a non-polar group (NPL), wherein  $A'$  is aryl or heteroaryl and is optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s); or
- (vi)  $-z-y-A'$ , and  $R^2$  is  $-x-A''$ , wherein  $A'$  and  $A''$  are independently aryl or heteroaryl, and each of  $A'$  and  $A''$  is optionally substituted with one or

more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s); or

(vii)  $R^1$  and  $R^2$  are independently a polar group (PL) or a non-polar group (NPL);

or

(viii)  $R^1$  and  $R^2$  together form a single bond;

NPL is a nonpolar group independently selected from the group consisting of

$-B(OR^4)_2$  and  $-(NR^{3'})_{q1NPL}-U^{NPL}-(CH_2)_{pNPL}-(NR^{3''})_{q2NPL}-R^{4'}$ , wherein:

$R^3$ ,  $R^{3'}$ , and  $R^{3''}$  are independently selected from the group consisting of hydrogen, alkyl, and alkoxy;

$R^4$  and  $R^{4'}$  are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, and heteroaryl, any of which is optionally substituted with one or more alkyl or halo groups;

$U^{NPL}$  is absent or selected from the group consisting of O, S,  $S(=O)$ ,  $S(=O)_2$ ,  $NR^3$ ,  $-C(=O)-$ ,  $-C(=O)-N=N-NR^3-$ ,  $-C(=O)-NR^3-N=N-$ ,  $-N=N-NR^3-$ ,  $-C(=N-N(R^3)_2)-$ ,  $-C(=NR^3)-$ ,  $-C(=O)O-$ ,  $-C(=O)S-$ ,  $-C(=S)-$ ,  $-O-P(=O)_2O-$ ,  $-R^3O-$ ,  $-R^3S-$ ,  $-S-C=N-$  and  $-C(=O)-NR^3-O-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

the  $-(CH_2)_{pNPL}-$  alkylene chain is optionally substituted with one or more amino or hydroxy groups, or is unsaturated;

$pNPL$  is 0 to 8;

$q1NPL$  and  $q2NPL$  are independently 0, 1 or 2;

PL is a polar group selected from the group consisting of halo, hydroxyethoxymethyl, methoxyethoxymethyl, polyoxyethylene, and

$-(NR^{5'})_{q1PL}-U^{PL}-(CH_2)_{pPL}-(NR^{5'})_{q2PL}-V$ , wherein:

$R^5$ ,  $R^{5'}$ , and  $R^{5''}$  are independently selected from the group consisting of hydrogen, alkyl, and alkoxy;

$U^{PL}$  is absent or selected from the group consisting of O, S,  $S(=O)$ ,  $S(=O)_2$ ,  $NR^5$ ,  $-C(=O)-$ ,  $-C(=O)-N=N-NR^5-$ ,  $-C(=O)-NR^5-N=N-$ ,  $-N=N-NR^5-$ ,  $-C(=N-N(R^5)_2)-$ ,  $-C(=NR^5)-$ ,  $-C(=O)O-$ ,  $-C(=O)S-$ ,  $-C(=S)-$ ,  $-O-P(=O)_2O-$ ,  $-R^5O-$ ,  $-R^5S-$ ,  $-S-C=N-$  and  $-C(=O)-NR^5-O-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

V is selected from the group consisting of nitro, cyano, amino, hydroxy, alkoxy, alkylthio, alkylamino, dialkylamino,  $-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , diazamino, amidino, guanidino, guanyl, semicarbazone, aryl, heterocycle and heteroaryl, any of which is optionally substituted with one or more of amino, halo, cyano, nitro, hydroxy,  $-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , amidino, guanidino, guanyl, aminosulfonyl, aminoalkoxy, aminoalkythio, lower acylamino, or benzyloxycarbonyl;

the  $-(CH_2)_{pPL}-$  alkylene chain is optionally substituted with one or more amino or hydroxy groups, or is unsaturated;

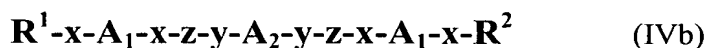
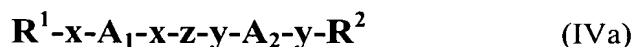
pPL is 0 to 8;

q1PL and q2PL are independently 0, 1 or 2; and

m is 1 to about 20;

and a pharmaceutically acceptable carrier or diluent.

56. (withdrawn) A method of treating a microbial infection in an animal in need thereof, said method comprising administering to the animal an effective amount of a pharmaceutical composition comprising an oligomer of Formula IVa, Formula IVb, or Formula IVc:



or an acceptable salt or solvate thereof,

wherein:

x is  $\text{NR}^8$ ,  $-\text{NR}^8\text{NR}^8-$ ,  $\text{C}=\text{O}$ , or  $\text{O}$ ; y is  $\text{NR}^8$ ,  $-\text{NR}^8\text{NR}^8-$ ,  $\text{C}=\text{O}$ ,  $\text{S}$ , or  $\text{O}$ ; and  $\text{R}^8$  is hydrogen or alkyl;

z is  $\text{C}=\text{O}$ ,  $\text{C}=\text{S}$ ,  $\text{O}=\text{S}=\text{O}$ ,  $-\text{NR}^8\text{NR}^8-$ , or  $-\text{C}(=\text{O})\text{C}(=\text{O})-$  ;

$\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted arylene or optionally substituted heteroarylene, wherein  $\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s);

$\text{R}^1$  is hydrogen, a polar group (PL), or a non-polar group (NPL), and  $\text{R}^2$  is  $\text{R}^1$  ;

NPL is a nonpolar group independently selected from the group consisting of

$-\text{B}(\text{OR}^4)_2$  and  $-(\text{NR}^{3'})_{q1\text{NPL}}-\text{U}^{\text{NPL}}-(\text{CH}_2)_{p\text{NPL}}-(\text{NR}^{3''})_{q2\text{NPL}}-\text{R}^4'$ , wherein:



$R^3$ ,  $R^{3'}$ , and  $R^{3''}$  are independently selected from the group consisting of hydrogen, alkyl, and alkoxy;

$R^4$  and  $R^{4'}$  are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, and heteroaryl, any of which is optionally substituted with one or more alkyl or halo groups;

$U^{NPL}$  is absent or selected from the group consisting of O, S, S(=O), S(=O)<sub>2</sub>, NR<sup>3</sup>, -C(=O)-, -C(=O)-N=N-NR<sup>3</sup>-, -C(=O)-NR<sup>3</sup>-N=N-, -N=N-NR<sup>3</sup>-, -C(=N-N(R<sup>3</sup>)<sub>2</sub>)-, -C(=NR<sup>3</sup>)-, -C(=O)O-, -C(=O)S-, -C(=S)-, -O-P(=O)<sub>2</sub>O-, -R<sup>3</sup>O-, -R<sup>3</sup>S-, -S-C=N- and -C(=O)-NR<sup>3</sup>-O-, wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

the -(CH<sub>2</sub>)<sub>pNPL</sub>- alkylene chain is optionally substituted with one or more amino or hydroxy groups, or is unsaturated;

pNPL is 0 to 8;

q1NPL and q2NPL are independently 0, 1 or 2;

PL is a polar group selected from the group consisting of halo, hydroxyethoxymethyl, methoxyethoxymethyl, polyoxyethylene, and

-(NR<sup>5</sup>)<sub>q1PL</sub>-U<sup>PL</sup>-(CH<sub>2</sub>)<sub>pPL</sub>-(NR<sup>5</sup>)<sub>q2PL</sub>-V, wherein:

$R^5$ ,  $R^{5'}$ , and  $R^{5''}$  are independently selected from the group consisting of hydrogen, alkyl, and alkoxy;

$U^{PL}$  is absent or selected from the group consisting of O, S, S(=O), S(=O)<sub>2</sub>, NR<sup>5</sup>, -C(=O)-, -C(=O)-N=N-NR<sup>5</sup>-, -C(=O)-NR<sup>5</sup>-N=N-, -N=N-NR<sup>5</sup>-, -C(=N-N(R<sup>5</sup>)<sub>2</sub>)-, -C(=NR<sup>5</sup>)-, -C(=O)O-, -C(=O)S-, -C(=S)-, -O-P(=O)<sub>2</sub>O-,

$-R^5O-$ ,  $-R^5S-$ ,  $-S-C=N-$  and  $-C(=O)-NR^5-O-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

V is selected from the group consisting of nitro, cyano, amino, hydroxy, alkoxy, alkylthio, alkylamino, dialkylamino,  $-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , diazamino, amidino, guanidino, guanyl, semicarbazone, aryl, heterocycle and heteroaryl, any of which is optionally substituted with one or more of amino, halo, cyano, nitro, hydroxy,  $-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , amidino, guanidino, guanyl, aminosulfonyl, aminoalkoxy, aminoalkythio, lower acylamino, or benzyloxycarbonyl;

the  $-(CH_2)_{pPL}-$  alkylene chain is optionally substituted with one or more amino or hydroxy groups, or is unsaturated;

pPL is 0 to 8;

q1PL and q2PL are independently 0, 1 or 2; and

a pharmaceutically acceptable carrier or diluent.

57. (withdrawn) The method of claim 56, wherein the pharmaceutical composition comprises an oligomer of Formula IV'b, wherein:

x is  $NR^8$ , y is  $NR^8$ , z is  $C=O$ , and  $R^8$  is hydrogen;

$A_1$  and  $A_2$  are independently optionally substituted *o*-, *m*-, or *p*-phenylene;

NPL is  $-(NR^{3'})_{q1NPL}-U^{NPL}-(CH_2)_{pNPL}-(NR^{3''})_{q2NPL}-R^{4'}$ , wherein:

$R^{4'}$  is selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, and heteroaryl, any of which is optionally substituted with one or more alkyl or halo groups;

$U^{NPL}$  is selected from the group consisting of O, S,  $NR^3$ ,  $-C(=O)-$ ,  $-R^3O-$ , and  $-R^3S-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

the  $-(CH_2)_{pNPL}-$  alkylene chain is optionally substituted with one or more amino groups;

$pNPL$  is 0 to 8;

$q1NPL$  and  $q2NPL$  are 0;

PL is  $-(NR^{5'})_{q1PL}-U^{PL}-(CH_2)_{pPL}-(NR^{5'})_{q2PL}-V$ , wherein:

$U^{PL}$  is selected from the group consisting of O, S,  $NR^5$ ,  $-C(=O)-$ ,  $-R^5O-$  and  $-R^5S-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

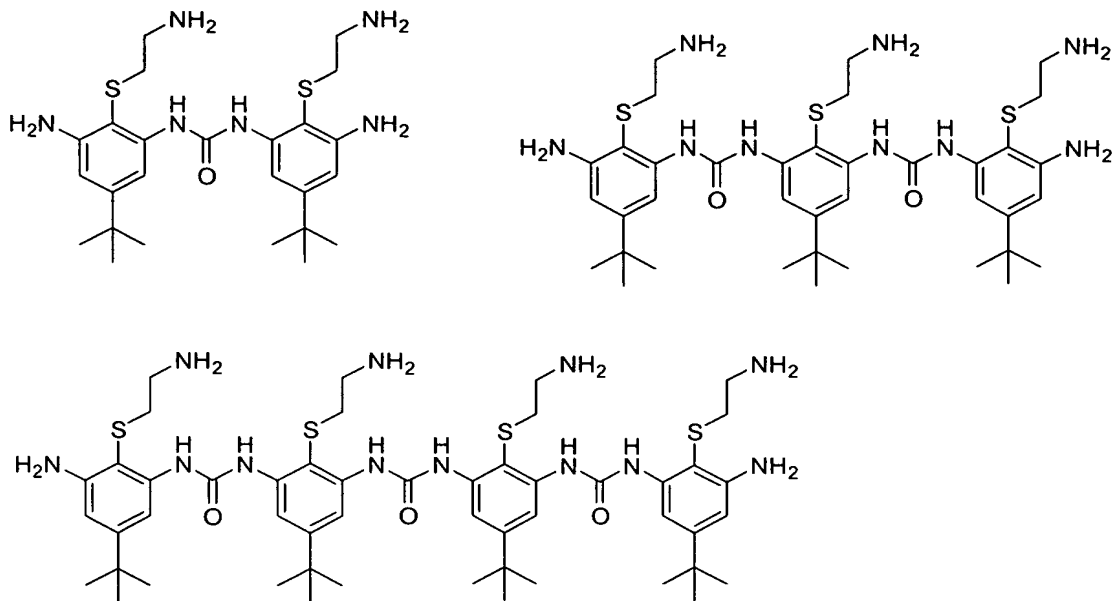
V is selected from the group consisting of amino, alkylamino, dialkylamino,  $-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , diazamino, amidino, guanidino, guanyl, aryl, heterocycle and heteroaryl;

the  $-(CH_2)_{pPL}-$  alkylene chain is optionally substituted with one or more amino groups;

$pPL$  is 0 to 8; and

$q1PL$  and  $q2PL$  are 0.

58. (withdrawn) The method of claim 56, wherein the oligomer is one of



59. (withdrawn) The method of claim 55 or 56, wherein the microbial infection is a bacterial infection, a fungal infection, or a viral infection.

60. (cancelled)

61. (cancelled)

62. (withdrawn) A method of providing an antidote to low molecular weight heparin overdose in an animal, said method comprising administering to the animal an effective amount of a pharmaceutical composition comprising an oligomer of claim 55 or claim 56.

63. (withdrawn) An oligomer of Formula IIa:



or an acceptable salt or solvate thereof,

wherein:

x is  $\text{NR}^8$ , O, S, or  $-\text{N}(\text{R}^8)\text{N}(\text{R}^8)-$ ; and y is C=O, C=S, or O=S=O; wherein  $\text{R}^8$  is hydrogen or alkyl;

$\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted arylene or optionally substituted heteroarylene, wherein  $\text{A}_1$  and  $\text{A}_2$  are independently optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s);

$\text{R}^1$  is a polar group (PL) or a non-polar group (NPL); and  $\text{R}^2$  is  $\text{R}^1$ ;

NPL is a nonpolar group independently selected from the group consisting of

$-\text{B}(\text{OR}^4)_2$  and  $-(\text{NR}^{3'})_{q1\text{NPL}}-\text{U}^{\text{NPL}}-(\text{CH}_2)_{p\text{NPL}}-(\text{NR}^{3''})_{q2\text{NPL}}-\text{R}^{4'}$ , wherein:

$\text{R}^3$ ,  $\text{R}^{3'}$ , and  $\text{R}^{3''}$  are independently selected from the group consisting of hydrogen, alkyl, and alkoxy;

$\text{R}^4$  and  $\text{R}^{4'}$  are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, and heteroaryl, any of which is optionally substituted with one or more alkyl or halo groups;

$\text{U}^{\text{NPL}}$  is absent or selected from the group consisting of O, S,  $\text{S}(=\text{O})$ ,  $\text{S}(=\text{O})_2$ ,  $\text{NR}^3$ ,  $-\text{C}(=\text{O})-$ ,  $-\text{C}(=\text{O})-\text{N}=\text{N}-\text{NR}^{3'}$ ,  $-\text{C}(=\text{O})-\text{NR}^3-\text{N}=\text{N}-$ ,  $-\text{N}=\text{N}-\text{NR}^{3'}$ ,  $-\text{C}(=\text{N}-\text{N}(\text{R}^3)_2)-$ ,  $-\text{C}(=\text{NR}^3)-$ ,  $-\text{C}(=\text{O})\text{O}-$ ,  $-\text{C}(=\text{O})\text{S}-$ ,  $-\text{C}(=\text{S})-$ ,  $-\text{O}-\text{P}(=\text{O})_2\text{O}-$ ,

$-R^3O-$ ,  $-R^3S-$ ,  $-S-C=N-$  and  $-C(=O)-NR^3-O-$ , wherein groups with two

chemically nonequivalent termini can adopt both possible orientations;

the  $-(CH_2)_{pNPL}-$  alkylene chain is optionally substituted with one or more amino

or hydroxy groups, or is unsaturated;

$pNPL$  is 0 to 8;

$q1NPL$  and  $q2NPL$  are independently 0, 1 or 2;

$PL$  is a polar group selected from the group consisting of halo, hydroxyethoxymethyl, methoxyethoxymethyl, polyoxyethylene, and

$-(NR^{5'})_{q1PL}-U^{PL}-(CH_2)_{pPL}-(NR^{5'})_{q2PL}-V$ , wherein:

$R^5$ ,  $R^{5'}$ , and  $R^{5''}$  are independently selected from the group consisting of hydrogen, alkyl, and alkoxy;

$U^{PL}$  is absent or selected from the group consisting of O, S,  $S(=O)$ ,  $S(=O)_2$ ,  $NR^5$ ,

$-C(=O)-$ ,  $-C(=O)-N=N-NR^5-$ ,  $-C(=O)-NR^5-N=N-$ ,  $-N=N-NR^5-$ ,

$-C(=N-N(R^5)_2)-$ ,  $-C(=NR^5)-$ ,  $-C(=O)O-$ ,  $-C(=O)S-$ ,  $-C(=S)-$ ,  $-O-P(=O)_2O-$ ,

$-R^5O-$ ,  $-R^5S-$ ,  $-S-C=N-$  and  $-C(=O)-NR^5-O-$ , wherein groups with two

chemically nonequivalent termini can adopt both possible orientations;

$V$  is selected from the group consisting of nitro, cyano, amino, hydroxy, alkoxy,

alkylthio, alkylamino, dialkylamino,  $-NH(CH_2)_pNH_2$  wherein  $p$  is 1 to 4,

$-N(CH_2CH_2NH_2)_2$ , diazamino, amidino, guanidino, guanyl,

semicarbazone, aryl, heterocycle and heteroaryl, any of which is

optionally substituted with one or more of amino, halo, cyano, nitro,

hydroxy,  $-NH(CH_2)_pNH_2$  wherein  $p$  is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , amidino,

guanidino, guanyl, aminosulfonyl, aminoalkoxy, aminoalkythio, lower acylamino, or benzyloxycarbonyl;

the  $-(CH_2)_{pPL}$ - alkylene chain is optionally substituted with one or more amino or hydroxy groups, or is unsaturated;

pPL is 0 to 8; and

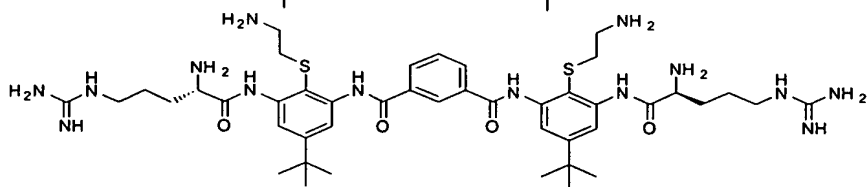
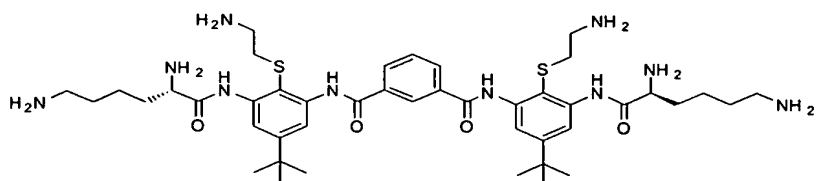
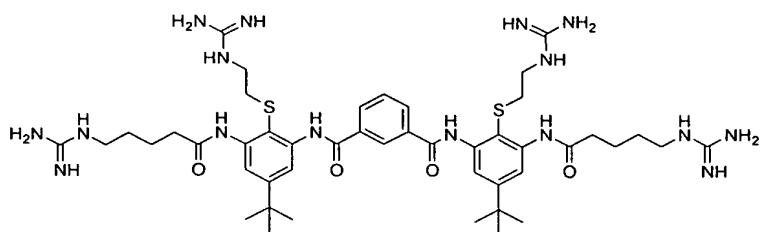
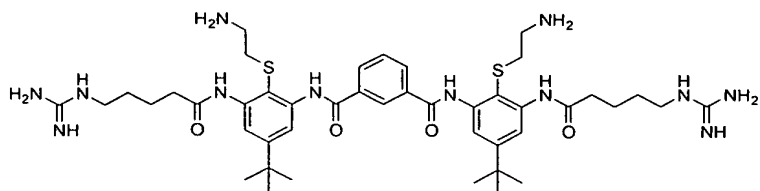
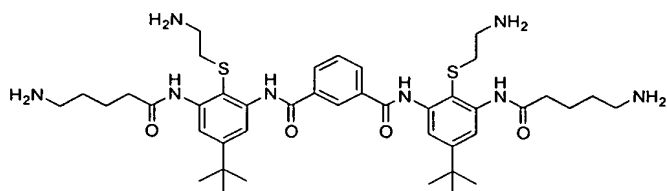
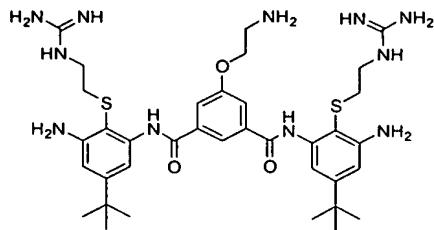
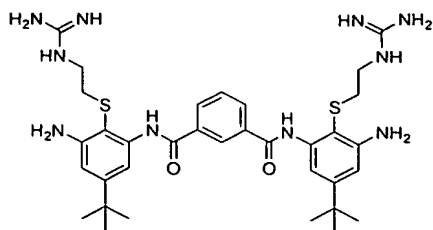
q1PL and q2PL are independently 0, 1 or 2.

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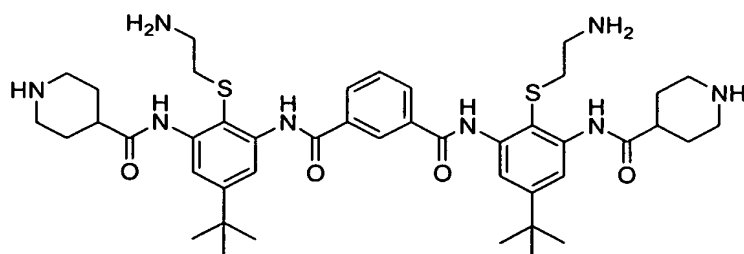
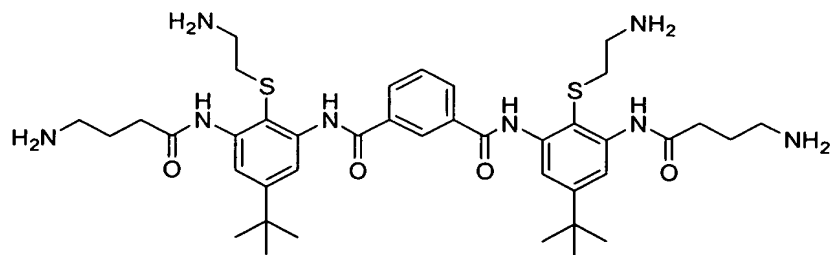
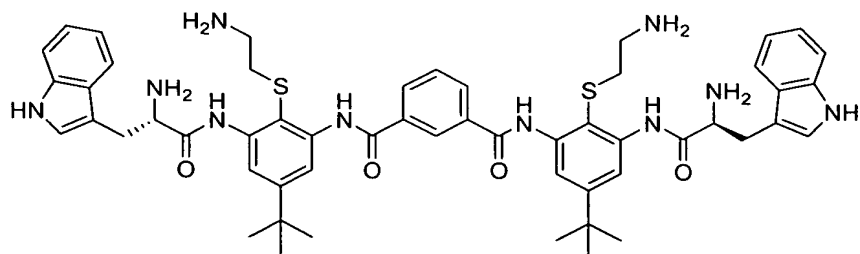
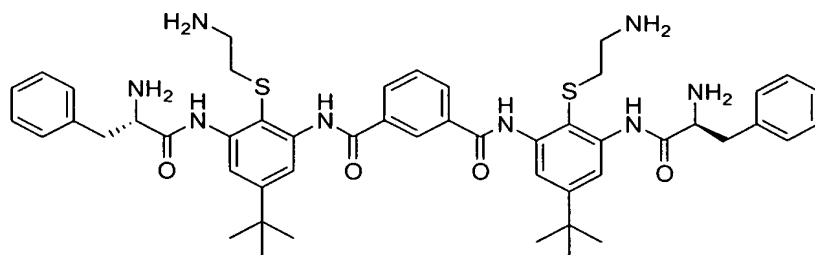
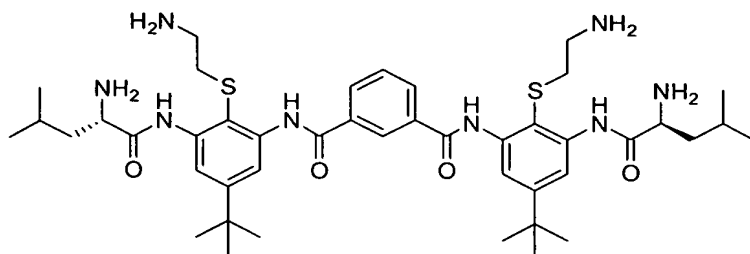
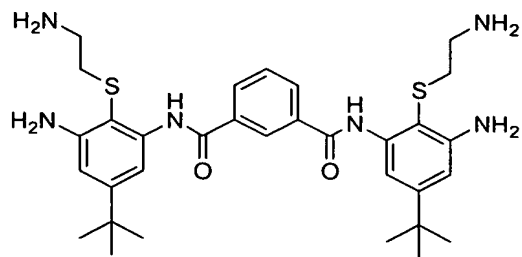
64. (cancelled)

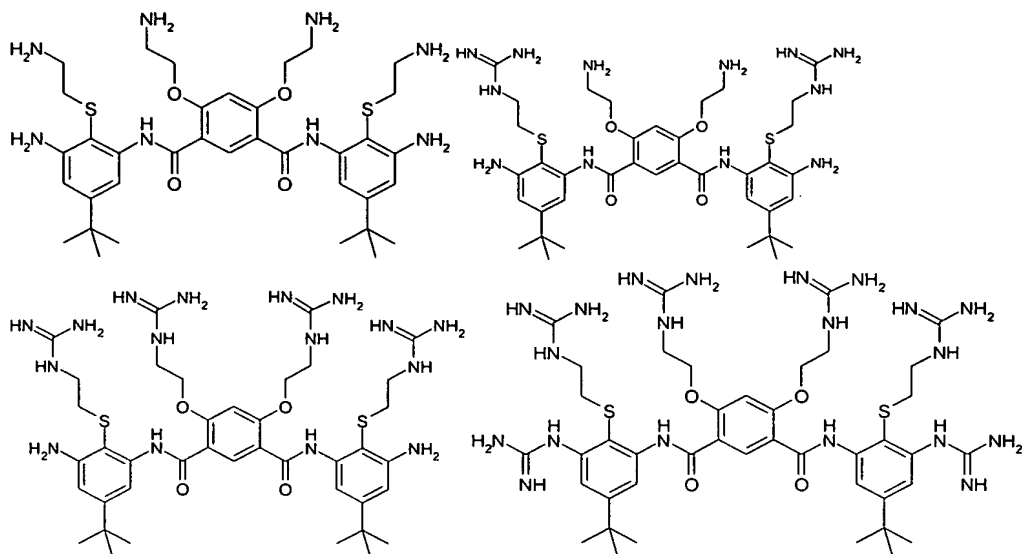
65. (withdrawn) A pharmaceutical composition comprising an oligomer of claim 63 and a pharmaceutically acceptable carrier or diluent.

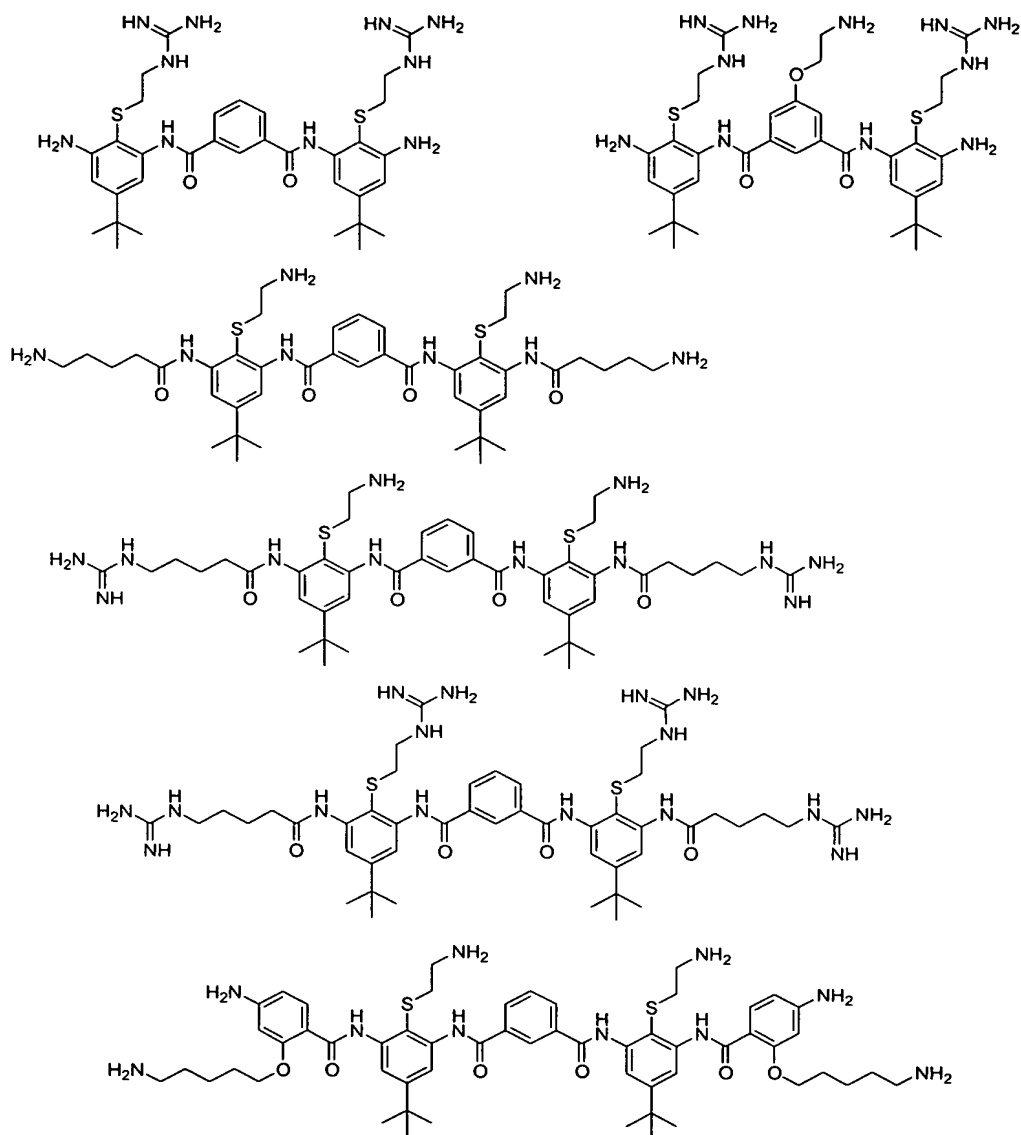
66. (new) The method of claim 48, wherein the amphiphilic oligomer is selected from the group consisting of:











67. (new) The method of claim 16, wherein:

x is NR<sup>8</sup>, y is C=O, and R<sup>8</sup> is hydrogen;

A<sub>1</sub> and A<sub>2</sub> are independently optionally substituted *m*-phenylene and *m*-pyrimidinylene,

wherein one of A<sub>1</sub> and A<sub>2</sub> is optionally substituted *m*-phenylene, and the other of

A<sub>1</sub> and A<sub>2</sub> is optionally substituted pyrimidinylene, and wherein

(i) one of  $A_1$  and  $A_2$  is substituted with one polar (PL) group and one nonpolar (NPL) group and the other of  $A_1$  and  $A_2$  is unsubstituted; or

(ii) one of  $A_1$  and  $A_2$  is substituted with one polar (PL) group and one nonpolar (NPL) group and the other of  $A_1$  and  $A_2$  is substituted with one or two polar (PL) group(s);

$R^1$  is hydrogen or a polar group (PL), and  $R^2$  is  $-x-A_1-x-R^1$ , wherein  $A_1$  is as defined above and is optionally substituted with one or more polar (PL) group(s), one or more non-polar (NPL) group(s), or a combination of one or more polar (PL) group(s) and one or more non-polar (NPL) group(s);

NPL is  $-(NR^{3'})_{q1NPL}-U^{NPL}-(CH_2)_{pNPL}-(NR^{3''})_{q2NPL}-R^{4'}$ , wherein:

$R^3$ ,  $R^{3'}$ , and  $R^{3''}$  are independently selected from the group consisting of hydrogen,  $C_1$ - $C_6$  alkyl, and  $C_1$ - $C_6$  alkoxy;

$R^{4'}$  is selected from the group consisting of hydrogen,  $C_1$ - $C_{10}$  alkyl,  $C_3$ - $C_{18}$  branched alkyl,  $C_2$ - $C_{10}$  alkenyl,  $C_2$ - $C_{10}$  alkynyl,  $C_3$ - $C_8$  cycloalkyl,  $C_6$ - $C_{10}$  aryl, and heteroaryl, any of which is optionally substituted with one or more  $C_1$ - $C_6$  alkyl or halo groups;

$U^{NPL}$  is absent or selected from the group consisting of O, S, NH,  $-C(=O)-$ ,  $-R^3S-$  and  $-R^3O-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

the  $-(CH_2)_{pNPL}-$  alkylene chain is optionally substituted with one or more amino groups;

$pNPL$  is 0 to 6;

$q1NPL$  and  $q2NPL$  are 0;

PL is  $-(NR^{5'})_{q1PL}-U^{PL}-(CH_2)_{pPL}-(NR^{5'})_{q2PL}-V$ , wherein:

$R^5$ ,  $R^{5'}$ , and  $R^{5''}$  are independently selected from the group consisting of hydrogen,  $C_1$ - $C_6$  alkyl, and  $C_1$ - $C_6$  alkoxy;

$U^{PL}$  is absent or selected from the group consisting of O, S, NH,  $-C(=O)-$ ,  $-R^5O-$ , and  $-R^5S-$ , wherein groups with two chemically nonequivalent termini can adopt both possible orientations;

V is selected from the group consisting of amino, hydroxy,  $C_1$ - $C_6$  alkylamino,  $-NH(CH_2)_pNH_2$  wherein p is 1 to 4,  $-N(CH_2CH_2NH_2)_2$ , diazamino, amidino, and guanidino;

the  $-(CH_2)_{pPL}-$  alkylene chain is optionally substituted with one or more amino groups;

pPL is 0 to 6;

q1PL and q2PL are 0; and

m is 1, 2 or 3.

68. (new) The method of claim 67, wherein the amphiphilic oligomer is selected from the group consisting of:

